

REMARKS

This Amendment is responsive to the non-Final Office Action mailed May 21, 2008. Reconsideration and allowance of claims 2 and 4-20 are requested.

The Office Action

Claims 1-3, 8-10, 12, 15-19, and 20 stand rejected under 35 U.S.C. § 102 as being anticipated by Machida (US 7,110,805).

Claims 4, 5, and 13 stand rejected under 35 U.S.C. § 103 as being obvious over Machida, taken alone.

Claims 6, 7, 11, and 14 stand rejected under 35 U.S.C. § 103 as being unpatentable over Machida as modified by Madore (US 6,714,010).

**The Claims Distinguish Patentably
Over the References of Record**

Claim 2 has been placed in independent form including the subject matter of parent claim 1. Claim 2 calls for an imaging volume. Although a magnetic resonance imaging machine can collect data across the entire imaging volume (note Machida), claim 2 calls for data to be collected only from a sub-volume, particularly a slab. The data needed for a three-dimensional imaging method is acquired from the slab as the slab moves across the imaging volume. Thus, rather than collecting data from the entire imaging volume, claim 2 calls for collecting data only from the slab as it tracks across the imaging volume. Data is acquired from one slab as it tracks across the imaging volume and after the full three-dimensional imaging method data set is collected from that slab, data from the next slab is collected as it tracks across the imaging volume, etc. In this manner, the entire three-dimensional slab remains in the imaging volume during the time necessary to collect data along all three dimensions. If one were to try to collect 3D image data across the entire imaging volume like Machida does, portions of the slab or sub-volume would move out of the imaging region before data in some of the dimensions, particularly the z- or axial dimension, could be fully collected.

Machida teaches against this slab tracking method in favor of a frequency indexing method which generates a series of two-dimensional slice images. In the embodiment of Figure 2, where the number of interleaved slices is three, a data

line is collected cyclically from each of three slices, with the frequency being indexed between acquiring the data line for each slice. In this manner, a plurality, e.g., three, of 2D slice imaging routines is repeated cyclically using frequency indexing to generate a series of slice images.

It will be noted that Machida has the advantage of greater efficiency in the sense that data is collected across the entire imaging volume. However, Machida has the disadvantage in that it is not applicable to three-dimensional imaging methods such as those in which a 3D data set is collected with data being phase-encoded in both the axial and one of the transverse directions because the slab would move at least partially out of the imaging volume before all of the phase-encoded data in the axial direction could be collected.

Thus, as set forth in claim 2, the present application performs a function which Machida is unable to perform, namely performing a three-dimensional imaging method on a slab as it moves across the imaging volume.

Accordingly, it is submitted that **claim 2 and claims 4-8 and 18-20 dependent therefrom** distinguish patentably and unobviously over the references of record.

Claim 8 emphasizes this distinction by requiring that data acquisition from one slab be completed before starting the data acquisition for the subsequent slab. By contrast, in Machida, data from a plurality of slices is collected in an interleaved, cyclic manner.

Claim 9 also emphasizes the distinctions over Machida by requiring that the imaging volume have an extension along the direction of continuous motion which is at least twice the extension of each of the slabs.

Accordingly, it is submitted that **claims 8 and 9** distinguish yet more forcefully over Machida.

Claim 10 has been amended to incorporate the changes suggested by the Examiner. Claim 10 calls for a computer readable medium containing instructions which control a computer system in which a gradient pulse sequence defines a sub-volume, which sub-volume moves continuously along a predetermined path across an imaging volume. Claim 10 further calls for the magnetic resonance image data acquisition to acquire a full set of imaging data from the first sub-volume to be

fully acquired before commencing acquisition of image data for a subsequent sub-volume. By contrast, in Machida, portions of slice imaging data are collected interleaved and cyclically for each of a plurality of slices. Data for one slice is not completed before a data acquisition of the next slice is commenced. Accordingly, it is submitted that **claim 10 and claim 11 dependent therefrom** are not anticipated by Machida.

Claim 12 calls for the sub-volume from which data is acquired to track across the image volume such that data acquisition for each sub-volume is completed before data acquisition for a subsequent sub-volume is commenced. By contrast, Machida cyclically collects portions of data for each of a plurality of slices in an interleaved manner. Accordingly, it is submitted that **claim 12 and claims 13-17 dependent therefrom** are not anticipated by and distinguish patentably and unobviously over the references of record.

Claim 15 emphasizes that the data is collected sequentially in a non-interleaved fashion.

Claim 16 emphasizes that the imaging volume has a length at least twice the length of the sub-volumes.

Accordingly, it is submitted that **claims 15 and 16** distinguish yet more forcefully over Machida.

35 U.S.C. § 112

Claim 10 has been amended to address the 35 U.S.C. § 112 issues raised by the Examiner. Accordingly, it is submitted that claim 10 and claim 11 dependent therefrom now comply fully with the requirements of 35 U.S.C. § 112.

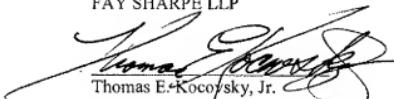
CONCLUSION

For the reasons set forth above, it is submitted that claims 2 and 4-20 distinguish patentably over the references of record and meet all statutory requirements. An early allowance of all claims is requested.

In the event personal contact is deemed advantageous to the disposition of this case, the Examiner is requested and authorized to telephone the undersigned at (216) 861-5582.

Respectfully submitted,

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